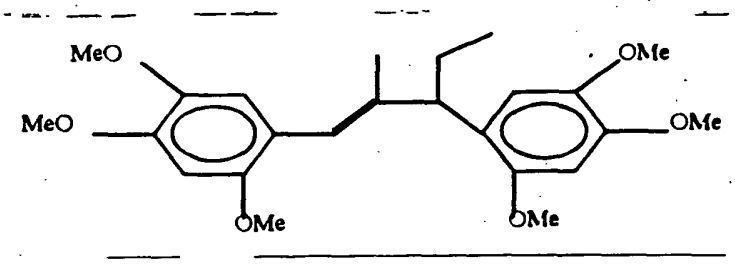
Claims

1. A novel neolignan 3-ethyl-2-methyl-3-(2", 4", 5"-trimethoxy-phenyl-1-(2',4',5'-trimethoxy) phenyl-1-(2',4',5'-trimethoxy)phenyl-1-propene of formula (II)



(II)

2. A neolignan compound as claimed in claim 1 has following physical characteristics:

R_f: 0.45 (solvent: Ethylacetate-Hexane; 2:8)

m.p; 96° -97° C

^{1}H NMR ($CDCl_3$) δ 6.91 (1H, s, H-6'), 6.84 (1H, s, H-6"), 6.55(1H, s, H-3'), 6.51 (1H, s, H-3"), 6.48 (1H, s, H-1), 3.96 (6H, s, 2'-OCH_3 and 2"-OCH_3), 3.84 (6H, s, 4'-OCH_3 and 4"-OCH_3), 3.80(3H, s, 5'-OCH_3), 3.78 (3H, s, 5"-OCH_3), 3.59(1H, t, H-3), 1.70-1.97 (2H, m , H-4), 1.66 (3H, s, H-6), 0.93(3H, t, H-5);

^{1}H NMR (DMSO-d_6) δ 6.79 (1H, s, H-6'), 6.68 (1H, s, H-6"), 6.67 (1H, s, H-3'), 6.66 (1H, s, H-3"), 6.34 (1H, s, H-1), 3.84 (9H, s, 2"-OCH_3, 4"-OCH_3 and 5"-OCH_3), 3.68 (3H, s, 2'-OCH_3), 3.66 (3H, s, 4'-OCH_3), 3.62 (3H, s, 5'-OCH_3),3.53 (1H, t, H-3), 1.88-1.67 (2H, m, H-4),1.60(3H,s,H-6), 0.84 (3H, t, H-5);

^{13}CNMR ($CDCl_3$) δ 152.48 (C-2'), 152.02 (C-2"), 148.48 (C-4'), 147.94 (C-4"), 143.57 (C-5'), 142.89 (C-5"), 140.41 (C-2), 124.88 (C-1'), 120.18 (C-1), 119.65 (C-1"), 114.88 (C-6'), 112.14 (C-6"), 99.47 (C-3'), 99.37 (C-3"), 57.37 (5"-OCH_3), 57.09 (5'-OCH_3), 57.07 (4"-OCH_3), 56.94 (4'-OCH_3), 56.55(2"-OCH_3), 56.48 (2'-OCH_3), 47.38 (C-3), 26.74 (C-4), 17.82 (C-6), 12.84 (C-5);

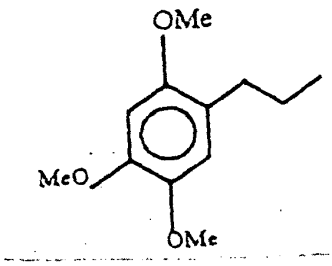
^{13}C NMR (DMSO-d_6) δ 152.56 (C-2'), 152.11 (C-2"), 149.07 (C-4'), 148.53 (C-4"), 143.53 (C-5'), 142.84 (C-5"), 139.45(C-2), 123.96 (C-1'), 120.56 (C-1),

119.09 (C-1"), 115.47 (C-6'), 13.02 (C-6"), 99.55 (C-3'), 99.23 (C-3"), 57.39(5"-OCH_3), 57.24 (5'-OCH_3), 57.17 (4"-OCH_3), 57.08 (4'-OCH_3), 56.63 (2"-OCH_3), 56.59 (2'-OCH_3), 47.56 (C-3), 26.46 (C-4), 17.71 (C-6), 13.33 (C-5);

NMR (DEPT-135°) δ 120.56(C-1), 115.47 (C-6'), 113.02 (C-6"), 99.55 (C-3'), 99.23 (C-3"), 57.39 (5"-OCH_3), 57.24 (5'-OCH_3), 57.17 (4"-OCH_3), 57.08 (4'-OCH_3), 57.08 (4'-OCH_3), 56.63 (2"-OCH_3), 56.59 (2'-OCH_3), 47. 56 (C-3, down), 26.46 (C-4), 17.71 (C-6), 13.33 (C-5);

EIMS m/z (%): 416 [M]+ (14), 219 (100), 209 (47), 181 (21), 171 (20), 71 (27).

3. A neolignan as claimed in claim 1 is named as NEOLASA –I
4. A neolignan as claimed in claim 1 has one asymmetric center.
5. A neolignan as claimed in claim 1 has aliphatic side chain with one double bond.
6. A neolignan as claimed in claim 1 is capable of undergoing conversion into several naturally occurring neolignan and lignan derivatives.
7. A neolignan as claimed in claim 1 is capable of undergoing hydrogenation to yield dihydro neolignan 3-ethyl-2-methyl-3-(2",4", 5"-trimethoxy) phenyl-1-(2', 4', 5'-trimethoxy) phenyl propane (III) to further establish the presence of a reducible double bond.
8. A dihydroneolignan as claimed in claim 7 is named as NEOLASA-II.
9. A dihydroneolignan as claimed in claim 7 has two asymmetric centers.
10. A process for the preparation of nelignan 3-ethyl-2-methyl-3-(2", 4", 5"-trimethoxy) phenyl-1-(2', 4', 5'-trimethoxy) phenyl-1-propene of formual II from toxic β-asarone or β-asarone rich *Acorus calamus* oil containing α and γ-asarone, the said process comprising the following steps:
    a) hydrogenating β-asarone or β-asarone rich calamus oil containing α and γ-asarone using 10% Pd/c catalyst, with or without ammonium formate under pressure between 0 - 40 psi at room temperature,
    b) purifying the product of step (a) over silica gel column to obtain compound of formula (I),



(I)

c) stirring the compound of formula (I) of step (b) with DDQ and an organic acid at room temperature for a period of 16-20 hrs.

d) filtering the precipitate solid ($DDQH_2$) and washing the residue with an organic acid,

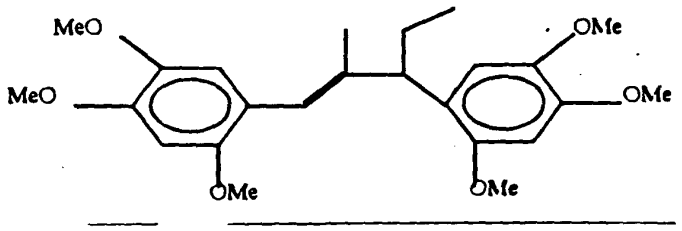
e) evaporating combined organic acid solution of step (d), to obtain a concentrated solution,

f) pouring concentrated solution of step (e) into water,

g) extracting the aqueous solution of step (f) with aliphatic halogenated hydrocarbon solvent and separating organic layer,

h) washing the organic layer of step (g) with brine, 10% bicarbonate solution, followed by again brine and drying organic layer over anhydrous sodium sulphate, filtering and evaporating to dryness to obtain a residue, and

i) purifying residue of step (h) over silica gel column to obtain three sets of fraction which are crystallized separately from a mixture of hexane:methanol to obtain α-asarone (I, 19 %), 1- (2,4,5-trimethoxy) phenyl-1-propanone (IIb, 22%) and neolignan 3-ethyl-2-methyl-3-(2", 4", 5"-trimethoxy) phenyl –1-(2', 4', 5'-trimethoxy)phenyl-1-propene (II, 32%)



(II)

11) A process as claimed in claim 10 wherein in step (c) the effective molar ratio of 2,4,5-trimethoxyp propane and DDQ is in the range of 1:1 to 1:2.1

12) A process as claimed in claim 10, wherein in steps (c) and (d) the organic acid used is selected form acetic acid or propionic acid and preferably acetic acid.

13) A process as claimed in claim 10, wherein in step (g) the aliphatic halogenated hydrocarbon solvent used is selected from dichloromethane, carbontetrachloride or chloroform and preferably dichloromethane.

14) A process of claim 10 provides neolignan and other useful side products of high purity.

15) A process as claimed in claim 10 wherein in step (I) the neolignan obtained is termed as NEOLASA-I.

16) A process as claimed in claim 10, wherein the said neolignan (II) has one asymmetric center.

17) A process as claimed in claim 10, wherein the said neolignan (II) neolignan obtained provides the opportunity for evaluation of its biological activity.

18) A process as claimed in claim 10, wherein the said neolignan (II) has aliphatic side chain with one double bond.

19) A process as claimed in claim 10, wherein the said neolignan (II) is capable of undergoing conversion into several naturally occurring neolignans and lignan derivatives.

20) A process as claimed in claim 10, wherein the said neolignan (II) is capable of undergoing hydrogenation to yield dihydroneolignan 3-ethyl-2-methyl-3-(2",4", 5"-trimethoxy)phenyl-1-(2', 4', 5'-trimethyoxy)phenyl propane (III) to further substantiate the presence of a double bond in neolignan (II).

21) A dihyroneolignan (III) of claim 17 is named as NEOLASA-II.

22) A dihydrolignan (III) of claim 17 has two asymmetric centers